

What is Claimed is:

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- [c1] A method for preventing contamination after plating a metal or an alloy on a surface of a substrate comprising:
- a) providing a plating solution on the surface of the substrate;
 - b) electroplating or electrolysis plating the metal or alloy on the surface of the substrate; and,
 - c) introducing a stabilizing agent which keeps metal or alloy ions in the plating solution.
- [c2] Method according to claim 1, wherein in said introducing step (c) the stabilizing agent prevents formation of precipitated salts on the surface of the substrate.
- [c3] Method according to claim 1, wherein the stabilizing agent comprises an aqueous solution of a complexing agent for the plating metals.
- [c4] Method according to claim 3, wherein the complexing agent comprises an organic or inorganic compound.
- [c5] Method according to claim 3, wherein the complexing agent comprises a mixture of an organic compound and an inorganic compound.
- [c6] Method according to claim 3, wherein the aqueous solution of the complexing agent for the plating metals comprises Citrate, Acetate, EDTA, or Ammonia.
- [c7] Method according to claim 6, wherein in said introducing step (c) at least one of the aqueous solutions of the complexing agent is introduced in the following concentrations:
- Citrate in a preferred concentration of about 0.5 to about 1.0 mol/kg,
 - Acetate in a preferred concentration of about 0.5 mol/kg,
 - EDTA in a preferred concentration of about 0.2 to about 0.5 mol/kg,
 - and/or
 - Ammonia in a preferred concentration of about 0.1 to about 1.0 mol/kg.
- [c8] Method according to claim 1, wherein the stabilizing agent comprises an acid.
- [c9] Method according to claim 8, wherein the acid does not form a low-soluble salt
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with the plated metals.

- [c10] Method according to claim 8, wherein the acid comprises an organic or inorganic compound.
- [c11] Method according to claim 8, wherein the acid comprises a mixture of an organic compound and an inorganic compound.
- [c12] Method according to claim 8, wherein the acid comprises aqueous solutions of Hydrochloric Acid, Sulfuric Acid, or Phosphoric Acid.
- [c13] Method according to claim 12, wherein in said introducing step (c) at least one of the aqueous solutions is introduced in the following concentrations:
Hydrochloric Acid in a preferred concentration of about 0.1 mol/kg,
Hydrochloric Acid in a preferred concentration of about 0.01 mol/kg,
Sulfuric Acid in a preferred concentration of about 0.05 mol/kg, and/or
Phosphoric Acid in a preferred concentration of about 0.1 mol/kg.
- [c14] Method according to claim 1, wherein the stabilizing agent comprises a mixture of an aqueous solution of a complexing agent for the plating metals and an acid.
- [c15] Method according to claim 1, wherein the stabilizing agent is contained in the plating solution.
- [c16] Method according to claim 1, wherein the substrate comprises a semiconductor wafer.
- [c17] A solution for preventing contamination after plating a metal or an alloy on a surface of a substrate comprising:
a plating solution; and
a stabilizing agent which keeps metal or alloy ions in the plating solution.
- [c18] The solution according to claim 17, wherein the stabilizing agent prevents formation of precipitated salts on the surface of the substrate.
- [c19] The solution according to claim 17, wherein the stabilizing agent comprises an aqueous solution of a complexing agent for the plating metals.

[c20] The solution according to claim 19, wherein the complexing agent comprises an organic or inorganic compound.

[c21] The solution according to claim 19, wherein the complexing agent comprises a mixture of an organic compound and an inorganic compound.

[c22] The solution according to claim 19, wherein the aqueous solution of the complexing agent for the plating metals comprises Citrate, Acetate, EDTA, or Ammonia.

[c23] The solution according to claim 22, wherein at least one of the aqueous solutions of the complexing agent comprises:

Citrate in a preferred concentration of about 0.5 to about 1.0 mol/kg,

Acetate in a preferred concentration of about 0.5 mol/kg,

EDTA in a preferred concentration of about 0.2 to about 0.5 mol/kg,

and/or

Ammonia in a preferred concentration of about 0.1 to about 1.0 mol/kg.

[c24] The solution according to claim 17, wherein the stabilizing agent comprises an acid.

[c25] The solution according to claim 24, wherein the acid does not form a low-soluble salt with the plated metals.

[c26] The solution according to claim 24, wherein the acid comprises an organic or inorganic compound.

[c27] The solution according to claim 24, wherein the acid comprises a mixture of an organic compound and an inorganic compound.

[c28] The solution according to claim 24, wherein the acid comprises aqueous solutions of Hydrochloric Acid, Sulfuric Acid, or Phosphoric Acid.

[c29] The solution according to claim 28, wherein at least one of the aqueous solutions of the acid comprises:

Hydrochloric Acid in a preferred concentration of about 0.1 mol/kg,

Hydrochloric Acid in a preferred concentration of about 0.01 mol/kg,

Sulfuric Acid in a preferred concentration of about 0.05 mol/kg, and/or
Phosphoric Acid in a preferred concentration of about 0.1 mol/kg.

- [c30] The solution according to claim 17, wherein the stabilizing agent comprises a mixture of an aqueous solution of a complexing agent for the plating metals and an acid.
- [c31] The solution according to claim 17, wherein the stabilizing agent is contained in the plating solution.
- [c32] The solution according to claim 17, wherein the substrate comprises a semiconductor wafer.
- [c33] In a method for plating a metal alloy on a surface of a substrate by electrolytic activity using a plating solution on the surface wherein the improvement comprises introducing a stabilizing agent onto the substrate surface in order to keep metal alloy ions in the plating solution.

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